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The treatment of the Zygomycetes is substantially the same as for the preceding series: first, fourteen pages outlining the main features of the order Mucorinæ, then a key to the genera, followed by a description of the species of the genus *Mucor* as far as the end of the first section, Mono-Mucor.

This volume, while devoted to the forms occurring in Germany, Austria, and Switzerland, can not fail to be of great service to American students, since many of the described species occur in this country. Reference to doubtful forms and extra-European ones also help to make the book indispensable.—ERWIN F. SMITH.

*Fruit culture in foreign countries.*—Reports from the consuls of the United States on fruit culture in their several districts in answer to a circular from the Department of State. Washington, Government Printing Office, 1890, pp. 391–937; Index, i–xiii.

This report is devoted principally to the citrous fruits, the olive, fig, and vine. Incidentally there are many references to the diseases of these plants, parasitic and nonparasitic. Some of the statements need to be taken *cum grano salis* because emanating from men not specially trained to observations of this kind, but on the whole the reports appear to be well written and will prove useful. A similar volume on the stone fruits of the world would be equally valuable.—ERWIN F. SMITH.

MANGIN, LOUIS.—(1) *Sur la callose, nouvelle substance fondamentale existant dans la membrane.* Comptes Rendus, Paris, tome CX, 24 Mars, 1890, p. 644.

(2) *Sur les réactifs colorants des substances fondamentales de la membrane.* Comptes Rendus, Paris, tome CXI, 15 Juillet, 1890, p. 120.

(3) *Sur la structure des Péronosporées.* Comptes Rendus, Paris, 15 Décembre, 1890, p. 923.

(4) *Sur la désarticulation des conidies chez les Péronosporées.* Bull. de la Soc. Bot. de France. Comptes Rendus des Séances, Paris, 1891, tome 38, pp. 176–184, 232–236, pl. 4.

(1) The author distinguishes three fundamental substances in the cell walls of plants—pectin compounds, cellulose, and callose. The latter has been studied quite carefully, and is described as a new fundamental substance, known hitherto only from sieve tubes. Not having been able to isolate it in sufficient purity for a chemical analysis, the author confines himself to an account of its distribution in plants.

Callose is colorless and amorphous, insoluble in water, alcohol, and Schweizer's reagent,\* even after the action of acids; very soluble in soda or cold caustic potash 1 to 100, soluble cold in sulphuric acid, chloride of calcium, and concentrated bichloride of tin; insoluble cold in the alkaline carbonates, and in ammonia, which swells it and gives it a gelatinous consistency. Besides aniline blue and rosolic acid†

\*Cuprammonia.

† Known also as corallin, aurin, peonin.